

REMARKS

The Amendments to the Specification

The Specification has been amended at the first full paragraph on page 17 to correct a typographical error. Support for the amendment is found at page 18, Table 1.

The Amendments to the Claims

Claims 1-26, 28-29 and 47 are pending in this application.

Claims 1 and 29 have been amended to delete "garden furniture" as redundant in view of the previous recitation in the claims of "furniture." Claim 25 has been amended to delete "skin color" and claim 27 has been cancelled. Claims 21 and 22 have been amended to specify "molded article" instead of "form" for parallel construction to the other claims. Claim 29 has further been amended to specify "resilience" instead of "a resilience." Support is found, e.g., in the paragraph bridging pages 13 and 14.

The Declaration of James Barber

The Declaration of James Barber filed October 31, 2005 has been deemed "not to have any value determinative of the patentability of the instant claims."

It is respectfully pointed out that this Declaration, in combination with the Declarant's previously-submitted Declaration (dated October 21, 2003), showed that there was a long-felt need in the art for retail mannequins and other display forms having a uniform color throughout. The uniform color throughout is desirable so that in case of chipping, the exposed material will not stand out because it is a different color from the material on the surface. In prior attempts to achieve uniform color throughout the mannequin, there were problems with both streaking and brittleness: "In our early attempts to color the forms, it was difficult to disperse the pigment uniformly, leaving a 'streaky' appearance. Furthermore, these early forms were more brittle than our standard polyurethane forms and were too brittle to be commercially viable." (Barber

Declaration, October 21, 2003). The solving of this problem was not trivial nor within ordinary skill in the art. The Barber Declaration of October 21, 2003 further states:

Our successful fabrication of color infused forms (having uniform color throughout their thickness) required selection of dyes or pigments compatible with the thermoset resins and the processing equipment and having viscosities and other properties as taught in the specification hereof. Careful dispersion of the dye or pigment was also required. Uniform dispersion of the dye or pigment is more difficult for larger volumes of the thermoset material.

It is believed no further Declarations are necessary for patentability in view of the further arguments below; however, if necessary, a further Declaration can be prepared providing formulas for the tested materials.

Claim Interpretation

The Office Action states that the term "garden furniture" is specific to the recited term "furniture" and deemed redundant. Accordingly, "garden furniture" has been deleted from the claims.

The Rejection Under Section 112, second paragraph

Claims 25 and 27 have been rejected under Section 112, second paragraph as indefinite. The Office Action states:

The Examiner is at a loss to understand the recitation of "skin color" in claims 25 and 27. This feature appears to vary with each person and does not appear to be uniform or standardized. Further the skin color of a dog differs from the skin color of other mammals, and the skin color of a frog would not be suitable for a mannequin. As such, the metes and bounds of such a recitation cannot be ascertained from the claims or Specification as filed.

While Applicants do not acquiesce to all aspects of this rejection, claim 25 has been amended to delete "skin color" and claim 27 has been cancelled. These amendments should obviate the rejection, and its withdrawal is respectfully requested.

The Obviousness Rejection over Roberts (U.S. 3,655,861), Moody (US 6,200,233), Kiyosawa et al. (US 6,187,514) in further view of Hashimura et al. (US 6,494,543) and Philpot et al. (US 6,352,485)

Claims 1-29 and 47 have been rejected over Roberts (U.S. 3,655,861), Moody (US 6,200,233), Kiyosawa et al. (US 6,187,514) in further view of Hashimura et al. (US 6,494,543) and Philpot et al. (US 6,352,485). The Office Action states:

All of the references cited, Roberts (U.S. 3,655,861), Moody (US 6,200,233), Kiyosawa et al. (US 6,187,514), Hashimura et al. (US 6,494,543) and Philpot et al. (US 6,352,485), teach the manufacture of hollow articles comprising a "thermosetting elastomeric material" with a "dye or pigment other than carbon particles mixed therein, as recited and claimed herein.

The reference to Roberts (US 3,655,861) shows the use of thermoset elastomers, including polyurethane rubber, that may be rotational molded to produce hollow articles, including furniture, as recited and claimed herein. Note column 3 (lines 4-33), column 11 (lines 14-33), column 13 (lines 1-8) for the polyurethane rubbers employed. The reference suggests the inclusion of pigments at column 13 (lines 35 et seq.) in their formulations. The patent employs a rotational molding process to produce hollow articles, as recited herein. Note column 4 (lines 51-66) and column 14 (lines 24-33).

The Roberts reference does not teach a method for making hollow articles. It is a "Method for the Manufacture of Molded Solid Plastics Articles" as shown in the title. It discloses making an outer "skin" of very thin thermoplastic material that is completely filled with a rigid thermosetting material. Note that at column 2, lines 20-25, the patent states: "Whereas the broadest claims of my Pat. 3,405,026 read on solidly filled articles, as originally filed, the scope of the claims therein are now limited to hollow articles of manufacture. This means that the skin component and the rigidifier jointly form a cavity, **which does not apply to the instant application.**" [Emphasis added.] At col. 2, line 45 through col. 3, line 3, the patent discloses that the article is formed from a pliable, hollow outer layer or "skin" and a dense filling which is rigid and "voidless." The outer skin is only 1/64" to 1/4" thick (col. 3, lines 41-43). The color is only on the surface of the article (col. 3, lines 9-10), or in the case of a "plastisol" [thermoplastic] skin, can be added to the plastisol (col. 13, lines 35-37). The reference to "rotational molding" in this patent at col. 14, lines 24-33 is with respect to rotational molding of the plastisol "skin" not a urethane rubber inner filling.

The Roberts reference therefore does not teach the use of thermoset elastomers, including polyurethane rubber that may be rotational molded to produce hollow articles, including furniture, nor the inclusion of pigments in such rotationally molded thermoset elastomers.

The Office Action characterizes the Moody reference as follows:

The patent to Moody (US 6,200,233) teaches the full incorporation of a pigment in to the elastomer that makes up the article. Note the paragraph bridging column 10 to column 11 and column 12 (lines 13-33). At column 10 (lines 28-47) the reference shows the employment of a thermosetting polyurethane elastomer, as claimed herein. The patent shows cavitation of the article at column 12 (lines 34-52) which embraces the concept as defined by applicant at page 10 of their response.

The Moody patent teaches a flexible hollow rubber golf tee. It is a much smaller object than the objects claimed herein, and is much thinner. It is so thin and flexible that it can be readily deformed to take on a different shape, as taught at col. 4, lines 15-22. It

is submitted that this is non-analogous art in that the desired properties of the finished object are so different from those required for mannequins and similar objects. One skilled in the art would not look to the golf tee art for teachings on how to solve problems of preserving physical properties that are quite different from those required for mannequins while obtaining uniform pigmentation throughout the thickness of the object, when that thickness is much larger for mannequins and related objects than for golf tees.

Although at col. 10, lines 48-53, the patent states that pigment is "fully incorporated into the elastomeric material," there is no disclosure that the pigment is uniformly incorporated throughout the thickness of the material, and even if it were, it cannot be extrapolated from this that pigment can be uniformly incorporated into larger objects to give a uniform molded product. As attested to in the Barber Declaration of October 21, 2003: "Uniform dispersion of the dye or pigment is more difficult for larger volumes of thermoset materials." This Declaration also attests to the fact that competitors were unsuccessful in their attempts to produce mannequins with uniform color throughout the material. This is **not** a matter of ordinary skill in the art. Furthermore, Moody does not teach cold rotational molding.

Neither Moody nor the combination of Roberts and Moody teach the elements of independent claims 1 and 29, and since they concern non-analogous arts, one skilled in the art would not be motivated to combine them.

The Office Action characterizes the Kiyosawa et al. reference as follows:

The patent to Kiyosawa et al (US 6,187,514) teaches the manufacture of a hollow article that may be produced from a thermosetting polyurethane elastomer, as recited. Note column 3 (lines 40-45). The paragraph bridging column 3 to column 4 shows the hollow article as defined by applicant. The addition of a colorant is shown at column 4 (lines 17 et seq.).

The Kiyosawa et al. patent, like the Moody patent is non-analogous art. One skilled in the art of manufacture of mannequins and related objects as claimed herein would not look to art having to do with forming pad characters in push button switches for teachings on how to obtain uniform coloration throughout the thickness of a mannequin, which thickness is much greater than that of a key top for a keyboard key. This key top is disclosed as being shaped like a "cup or hollow cylinder closed at one end" (col. 3, lines 62-65). The key top is not a closed hollow object like the mannequins and related objects claimed herein. As pointed out in the previous response to Office Action, "hollow" objects are defined herein as those that "have a void volume inside" (page 7, third full paragraph). See also the definition of Figure 1 on page 5 and Figure 1 showing that the "hollow" articles of this invention have a void volume completely surrounded by the outer shell of the article. The key top of the reference is not a hollow object by Applicants' definition.

Further, the key top does not have a uniform color throughout the thickness of the material. It is specifically designed to produce a different color delineating a character such as a number or letter on a part of the key top.

Therefore, neither Kiyosawa et al. nor Kiyosawa et al. in combination with the other references teaches an object having all the limitations of independent claims 1 and 29 hereof. Moreover, since these references concern non-analogous arts, one skilled in the art would not be motivated to combine them.

The Office Action characterizes the Hashimura et al. reference as follows:

The reference to Hashimura et al (US 6,494,543) is relied upon solely to show the use of organic pigments and dyes as suitable for inclusion into an elastomeric composition useful to manufacture hollow articles. Note column 2 (lines 48-51).

However, as stated at col. 5, lines 13-24, only the inner surface or liner has the colorant applied to it. Therefore this reference does not teach a uniform color throughout the selected material.

The Office Action characterizes the Philpot reference as follows:

The reference to Philpot et al (US 6,352,485) shows the production of hollow articles, including furniture, that may comprise urethane resins. Note the paragraph bridging column 3 to column 4 and column 5 (lines 35-44). The reference is clear at column 5 (lines 18-34) and especially at column 6 (lines 13-53) that a skilled artisan would know how to manipulate desirable physical characteristics including coloration as well as "flexibility, strength and density." Further note the paragraph bridging column 6 to column 7 for manipulation of toughness, flex/rebound, and strengthening or stiffness of the manufactured article. Finally, note column 8 (lines 13-24) for processability of the final product.

It is not clear whether the Office Action is relying on the "perform" inner portion or the "shell" outer portion of the reference. If it's the preform 201, this appears to be the subject of the discussion at the paragraph bridging column 3 to column 4, and column 5, lines 18-34. However, Col. 5 lines 13-53 appear to be discussing the outer shell 402. This is not a hollow article as defined herein. Moreover, the discussion at col. 6, lines 13-53 does not provide any enablement for maintaining physical properties while achieving uniform color throughout the thickness of the object. A mere statement that this is within ordinary skill in the art is not conclusive that it is, when Applicants have shown that, at least when dealing with articles the size of mannequins, it is not. Further, this reference does not disclose a rotational molding process.

Therefore the Philpot reference in combination with the other references does not meet the limitations of independent claims 1 and 29 hereof.

The Office Action sums up the teachings of the combined references as follows:

As such, the references teach the manufacture of hollow articles, from thermosetting polyurethane resins, as herein claimed, to be known in the art. Inclusion of a colorant or a pigment or dye, including organic pigments and dyes, is shown by the references to be known, including the use of an

organic dye or pigment. It would be assumed that the mixing of the polymer and the various additives that may be employed would be uniform. It has not been shown why one would not expect this to be so. The use of rotational molding is taught as suitable for these thermosetting polyurethane elastomers. A skilled artisan would know how to manipulate desirable physical characteristics as shown by the references. Although the references, taken singly do not disclose all of the features of the instant claims, taken together they show that the features are all known and can be manipulated for desired effect. Nothing unexpected has been shown on the record regarding any of the features claimed. As such, the manufacture of the hollow articles, using a colorant, as claimed, is deemed to be conventional and shown by the combination of references cited.

The assumption that mixing of the polymer and various additives that may be employed would be uniform—and that uniform color throughout the thickness of an object the size of a mannequin could be achieved by one of skill in the art is unwarranted.

While such an assumption appears logical on its face, as shown by the Barber Declarations, it was not trivial to achieve uniform color throughout the thickness of the mannequin. It was difficult for Applicants to achieve, and several competitors tried and failed to achieve it. In light of the Declarations, made under penalty of perjury, Applicants submit that it has been shown that it was not a matter of ordinary skill in the art to achieve uniform color throughout the thickness of the material.

Further, the assumption that uniform color can be achieved in a cold rotational molding process of an object the size of a mannequin while preserving necessary physical properties is unwarranted. A skilled artisan would not know how to manipulate physical properties. The Declarations show that simply mixing pigment into a formula that otherwise had the necessary physical properties made it too brittle and also caused loss of other physical properties. The references provide no guidance for achieving necessary physical properties when pigment is added. The Philpot reference, cited for this purpose, provides no guidance, and in any event, discloses the use of injection molding, not cold rotational molding.

In addition, since the references do not disclose all elements for which they were cited, their combination does not result in the presently-claimed invention. Roberts, a patent disclosing making knick-knacks, lamp bases and the like having a thin skin, discloses none of the claimed attributes of claim 1. Moody, a patent for a flexible hollow golf tee does disclose the use of a thermosetting resin to make a hollow object, but does not disclose cold rotational molding or achieving uniform color throughout while maintaining physical properties such as Izod impact strength. Kiyosawa, a patent for a key top for keyboard keys, does disclose the use of a thermosetting material, but no other limitations of claim 1. Hashimura, a patent for a tire, also discloses a thermosetting material but none of the other limitations of claim 1. Philpot, a patent for a bat, similarly discloses a thermosetting material, but none of the other limitations. None of the references disclose cold rotational molding. None disclose uniform color throughout the thickness, and none disclose the claimed Izod impact strength.

Further no motivation to combine the references has been provided, so no *prima facie* case of obviousness has been made out. Applicants not only solved the problem of (1) achieving uniform color throughout the cold rotational molding of a mannequin-sized hollow object, and (2) achieving such uniform color while preserving important physical properties, **they also discovered the problems to be solved**. The prior art does not mention these problems, and does not provide guidance for solving them. Since there was no motivation for combining the references, such combination can only be made in hindsight. However, in any event, such combination does not result in the claimed invention, and therefore no *prima facie* case of obviousness has been made out. Withdrawal of the rejection is respectfully requested.

Conclusion

It is believed that with this Amendment the application is now in condition for allowance and passage to issuance is respectfully requested.

It is believed that this amendment does not necessitate the payment of any fees under 37 C.F.R. 1.16-1.17. If this is incorrect, please charge any deficiency or fee for any extension of time required, or credit any overpayment under the foregoing rules to deposit account no. 07-1969.

Respectfully submitted,



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